CLAIMS

1. A semiconductor integrated circuit which has a non-contact IC card function and a wireless reader/writer function for non-contact IC card and to which a first antenna is connected to carry out communication with a non-contact IC card or a wireless reader/writer for non-contact IC card each placed in the vicinity of the semiconductor integrated circuit comprising:

demodulation means for demodulating a first received signal transmitted from the wireless reader/writer and received through the first antenna or a second received signal transmitted from the non-contact IC card;

full-wave rectification and smoothing means for subjecting the first received signal to full-wave rectification and smoothing;

first transmission means for transmitting a first transmission signal to the wireless reader/writer through the first antenna; and

second transmission means for transmitting a second transmission signal to the non-contact IC card through the first antenna.

2. A semiconductor integrated circuit according to claim 1, further comprising stabilization means for

stabilizing the power obtained from the first received signal subjected to the full-wave rectification and smoothing by the full-wave rectification and smoothing means.

3. A semiconductor integrated circuit according to claim 1, wherein the first transmission means is connected behind the full-wave rectification and smoothing means as well as transmits the first transmission signal by changing the load of a second antenna of the wireless reader/writer electromagnetically coupled with the first antenna.

4. A semiconductor integrated circuit according to claim 1, wherein an end of the second transmission means is connected to an end of the first antenna, and the other end of the second transmission means is connected to an intermediate tap of the first antenna.

5. A semiconductor integrated circuit according to claim 1, wherein the second transmission means transmits the second transmission signal that is a differential signal created based on a transmission carrier signal having a predetermined frequency and data to be transmitted to the non-contact IC card.

6. A semiconductor integrated circuit according to

claim 1, wherein the demodulation means demodulates the first received signal as the differential signal or the second received signal as the differential signal.

7. A wireless communication apparatus which has a non-contact IC card function and a wireless reader/writer function for non-contact IC card and carries out communication with a non-contact IC card or a wireless reader/writer for non-contact IC card each placed in the vicinity of the wireless communication apparatus comprising:

an antenna for carrying out communication with the non-contact IC card or the wireless reader/writer;

demodulation means for demodulating a first received signal transmitted from the wireless reader/writer and received through the antenna or a second received signal transmitted from the non-contact IC card;

full-wave rectification and smoothing means for subjecting the first received signal to full-wave rectification and smoothing;

first transmission means for transmitting a first transmission signal to the wireless reader/writer through the antenna; and

second transmission means for transmitting a second transmission signal to the non-contact IC card through the antenna.